

List of Current Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 - 10 (Cancelled).

11. (New) A process measuring device, comprising:
a first processor, which performs a measured value processing in first processing cycles with a first algorithm; and
a second processor, which is responsible for coordination and/or communication tasks, wherein:
additionally, said second processor, in time intervals, which are greater than the first processing cycle, reads a control data set from said first processor; and
on the basis of the control data set, executes the first algorithm, in order to verify correct functioning of said first processor.

12. (New) The process measuring device as claimed in claim 11, wherein:
the control data set contains raw measured values of a sensor and state variables, as well as associated result values calculated therefrom by said first processor.

13. (New) The process measuring device as claimed in claim 11, wherein:
the verifying occurs by direct comparison of the result read from said first processor with the result of the performing of the first algorithm by said second processor.

14. (New) The process measuring device as claimed in claim 11, wherein:
said second processor includes a program memory and the program memory is regularly verified by means of a test sum or a CRC.

15. (New) The process measuring device as claimed in claim 11, wherein:

said second processor further includes a write/read memory, which said second processor can regularly check for static errors by means of test pattern.

16. (New) The process measuring device as claimed in claim 11, wherein: said second processor includes a write/read memory, which said second processor can regularly check for static errors by means of test algorithm.

17. (New) The process measuring device as claimed in claim 11, wherein: said second processor compares and verifies data in the program memory of said first processor with a locally mirrored, memory range.

18. (New) The process measuring device as claimed in claim 11, wherein: said second processor verifies known constants in the data memory of said first processor by comparison with locally mirrored values.

19. (New) The process measuring device as claimed in claim 11, wherein: said second processor regularly verifies configuration registers of said first processor by comparison with locally mirrored values.

20. (New) The process measuring device as claimed in claim 11, further comprising:

a 4..20 mA, two-wire interface; and

a watchdog-circuit which checks the functioning of said second processor and an associated clock, and, in the case of error, signals an error via said 4..20 mA signal current, independently of said first processor and said second processor.